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THE PHILIPPINE MOSQUITOES.

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In April 1901, under the authority of the Medical Department, U. S. Army, there was begun in Manila, a research having for its original object some anatomical study of mosquitoes, especially those connected with the transmission of malaria. However, as the mosquitoes of the Philippine Islands were entirely unknown it became at once evident that systematic study of these insects was necessary before any anatomical problem could be undertaken, and the research then became purely entomological, only the correlation of the appearance of certain species with the incidence of these diseases being left of the work in preventive medicine. The anatomical work has since, for the most part, been worked out by others.

The collections are made by the Surgeons or Hospital Corps men, and, with a statement of the number of cases of malaria, dengue and filariasis present during the time of collection, mailed to me. While many of the collections are received in excellent condition, the identification of the specimens is often much hindered, or rendered impossible by carelessness in collecting, in preparing for shipment, and by accidents incident to transportation. On this account some species must wait for additional collections, often a matter of months, before accurate determination or description is possible.

The following forms have been determined from these collections and most of them previously reported, but it seems of possible interest that a complete list to date should be published, and this with the descriptions of some new forms are given below.

LIST OF MOSQUITOES REPORTED.

Anophelinæ. Theobald.
  Anopheles Meigen.
    formosus Ludlow.
  Myzomyia Blanchard.
    funesta Giles.
    indefinita Ludlow.
    rossii Giles.
    thorntonii Ludlow.

Stethomyia Theobald.
  pallida Ludlow.
Myzorhynchus Blanchard.
  barbirostris van der Wulp.
  pseudobarbirostris Ludlow.
  sinensis Wiedemann.
  vanus Walker.
Nyssorhynchus Blanchard.
  flava Ludlow.
    (*Cellia flava* Ludlow.)
  fuliginosus Giles.
  philippinensis Ludlow.
  stephensi (?) Liston.
  theobaldi Giles.
Calvertina Ludlow.
    (*calvertia* Ludlow.)
lineatus Ludlow.[1]

MEGARHININÆ. Theobald.
Toxorhynchites Theobald.
  argenteotarsis Ludlow.
  lewaldii Ludlow.
    (*Megarrhinus lewaldii* Ludlow.)

CULICINÆ. Theobald.
Mucidus Theobald.
  mucidus Karsch.
Quasistegomyia Theobald.
  gardnerii Ludlow.
Kingia (?) Theobald.
  gregoryi Ludlow.
Desvoidya Blanchard.
  fusca Theobald.
  joloënsis Banks.
    (*D. fusca* v. *joloënsis* Ludlow.)
  obturbans Walker.
Stegomyia Theobald.
  amesii Ludlow.
  fasciata Fabricius (*calopus* Meigen.)
  " v. *mosquito* Arribalzaga.
  " *luciencis* Theobald.
  nigritia Ludlow.
  quasinigritia n. sp. Ludlow.
  samarensis Ludlow.
    (*S. scutellaris* v. *Samarensis* Ludlow.)
  scutellaris Walker.
Ludlowia Theobald.
  chamberlainii Ludlow.
  minima Ludlow.
Scutomyia Theobald.
  nivea Ludlow.
Duttonia Theobald.
  alboannulis Ludlow.
Popea Ludlow.
  lutea Ludlow.
Culiciomyia Theobald.
  annulata Theobald.
  inornata Theobald.
Neomacleaya Theobald.
  indica Theobald.
Danielsea Theobald.
  pagei Ludlow.
Reedomyia Ludlow.
  alboscutella Theobald.
  niveoscutella Theobald.
  pampangensis Ludlow.
Pardomyia Theobald.
  quadripuncta Ludlow.
Leucomyia Theobald.
  argentea Ludlow.
    (*Taeniorhynchus argenteus* Ludlow.)
  gelidus v. *cuneatus* Theobald.
Culex Linnæus.
  alis Theobald.
  annulioris Theobald.
  aureopunctis Ludlow.
  cæcus Theobald.
  concolor Desvoidy.
  fatigans Weidemann.
  fragilis Ludlow.
  hirsutum Theobald.
  impellens Walker.
  ludlowii Blanchard.
    (*annulifera* Ludlow.
    microannulatus Theobald.)
  sitiens Walker.
  tigripes Grand & Charm.
Taeniorhynchus Arribalzaga.
  ager Giles.

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[1] This was at first referred tentatively to *Chagasia* Theob. but the abdominal scales seemed to throw it out of this genus.

- *aureosqumatus* Ludlow.
  - (*T. Pagei* Ludlow).
- *lineatopennis* Ludlow.
- *tenax* Theobald.
- *whitmoreii* Giles.
- sp.?
- *Chrysoconops* Goeldi.
  - *aurites* (?) Theobald.
  - *brevicellulus* (?) Theobald.
  - *conopas* Frauenfeld.
- *Mansonia* Blanchard.
  - *annulipes* Walker.
  - *uniformis* Theobald.
- *Mansonoides* Theobald.
  - *annulifera* Theobald.
  - *septemguttata* Theobald.
- *Etoerleptiomyia* Theobald.
  - (*O'Reillia* Ludlow.)
  - *luzonensis* Ludlow.
- *Finlaya* Theobald.
  - *poicilia* Theobald.
- *Oculeomyia* Theobald.
  - *fulleri* Ludlow.

- AËDINÆ. Theobald.
  - *Aedeomia* Theobald.
    - *squamipenna* Arribalzaga.
  - *Skusea* Theobald.
    - *diurna* Theobald.
    - *mediofasciata* Theobald.
      - (*Pseudoskusea nigritarsis* Ludlow.)
    - *funera* Theobald.
- URANOTAENIINÆ. Mitchell.
  - *Uranotaenia* Arribalzaga.
    - *ceruleocephala* Theobald.
    - *lateralis* Banks.
      - (*U. caeruleocephala* v. *lateralis* Ludlow.)
    - *powelli* Ludlow.
    - *pygmea* Theobald.
    - *testacea* Theobald.
  - *Pseudouranotaenia* Theobald.
    - *parangensis* Ludlow.
    - *triangulata* Ludlow.
- HARPAGOMYINÆ. Ludlow.
  - *Harpogomyia* Meijere.
  - *cœruleovitatta* Ludlow.
  - *Hodgesia* Theobald.
    - *niveocaputis* sp. nov.
- DENDROMYINÆ. Lutz.
  - *Dendromyia* Theobald.
  - (*Heizmannia* Ludlow.)
    - *scintillans* Ludlow.

A few words as to this list. So far as may be such errors as have occurred previously in my papers have been eliminated and corrected, this accounts for a couple of synonomies; variety *samarensis* mihi of *Stegomyia scutellaris* Walker I have elevated to a species, not because I am greatly in sympathy with the creation of species on slight differences, but merely to protect "the fruits of labor"; *Stegomyia persistans* Banks has been omitted because so far as I can judge it is merely a well marked *fasciata* (*calopus*) he being undoubtedly misled by imperfect descriptions, and by not having studied this species in America. The differences are destroyed by the slightest rubbing of the thorax, and this marking occurs in the Americas as well as the Philippines. Mr. Banks has been unfortunate in his collections if this be the only form he has found, the less well marked (or rubbed) form as well as v. *mosquito*, and v. *luciencis* are fairly common in the specimens taken by myself in the Philippines and in the collections sent by the Surgeons in the last ten years.

Danielsea pagei sp. nov.

Female. Head very dark, covered with dark flat scales except a narrow border of bright ochraceous slender curved scales around the eyes, a small spot of the same at the nape, and bright ochraceous forked scales also at the nape; antennæ dark brown, verticels and pubescence brown; palpi short, very dark; proboscis brown, very dark, somewhat swollen at the apex; clypeus brown; eyes dark brown.

Thorax—prothoracic lobes brown with bright ochraceous curved scales and dark brown bristles; mesonotum brown, covered with dark brown and bright ochraceous slender curved scales, the latter occurring as a very slender line on each side of the "bare space" extending cephalad the length of the mesonotum, a broken irregular or curved line exterior to this, and a more or less complete lateral line from the wing joint to the nape, much widened on the cephalad portion; scutellum dark, covered with bright ochraceous slender curved scales except in the middle of each lobe where the scales are dark brown and broader; pleura brown with at least three bunches of white scales; metanotum dark brown.

Abdomen with dark brown scales, with rather large white lateral spots on the six proximal segments; venter with heavy basal white bands.

Legs—coxæ and trochanters testaceous, the former with white scales; femora dark scaled dorsally, lighter at the bases, and ventral aspect white almost to the apex, more markedly so on the mid and hind legs, otherwise the legs are dark scaled; ungues all uniserrate.

Wings brown, clear, heavily scaled with brown rather large clavate scales; 1st submarginal longer and about the same width as 2nd posterior, its base interior, and its stem about 2-3 the length of the cell. The stem of the 2nd posterior cell markedly longer than its cell; root of 3rd longitudinal vein meets the mid cross-vein and is of about the same length, the posterior cross-vein about the same length as the mid, and distant twice its own length. Halteres with light stem and fuscous knob.

Length 3.5 with proboscis 4.5 mm.

Habitat. Fort Pikit, Mindanao, P. I. Taken. Nov. 6 A.M.

Described from seven specimens sent in collections by Major Henry Page, M. C., U. S. A.

Kingia gregoryi sp. nov.

Female. Head black covered with very dark flat round-ended scales, a brilliant white median triangular spot extending from the vertex caudad about half the length of the head, apex caudad, and equally brilliant lateral spots, a few dark bristles over the eyes: antennæ very dark, verticels dark and probably pubescence also, but it appears white in some lights, basal joint very dark; palpi brown scaled at the base and a very heavy brilliant white tip, probably extending over more than one joint; proboscis broken, what is left is brown scaled, eyes very dark; clypeus testaceous.

Thorax dark brown covered with dark brown broad curved scales and roundish-flat white ones; prothoracic lobes heavily covered with silver-white scales and a few brown bristles; mesonotum partly denuded but showing very dark broad curved scales over the general surface, a heavy spot of brilliant white round-ended flat scales at the laterocephalic angles, and the remains of a white median line of the same brilliant scales. This line is perfectly shown as a short line on the cephalad portion and on a spot midway of its length, the rest of the median portion of the mesonotum denuded; scutellum has a very large mid lobe, with brilliant white round-ended flat scales, and brown flat scales on the lateral lobes; pleura is very dark, and almost covered with brilliant white scales; metanotum dark brown.

Abdomen covered dorsally with dark brown scales and large lateral brilliant white spots, more basal than apical, but not strictly basal, on all but the eighth segment which is brown; venter with all creamy but brilliant scales.

Legs—coxæ all with brilliant white scales, trochanters with brown apical bands; femora a little lighter at the base and ventrally, otherwise the legs are entirely dark, almost black, with a tendency to dark blue iridescence;u ngues simple and equal.

Wings clear, brown scaled; cells long; the first sub-marginal longer and about the same width as the second posterior, more than twice as long as its petiole, its base interior to that of the second posterior, the latter also somewhat longer than its petiole; root of the third longitudinal is slightly interior to and about the same length as the mid cross-vein; the posterior cross-vein about the same length as the mid, and twice its own length interior; the scales resemble somewhat small *Taeniorhynchus* scales. Halteres have the apical half of the stem and knob dark, the base of the stem white.

Length, 4.5 mm. without proboscis.

Habitat. Ludlow Barracks, Parang, Mindanao, P. I. Taken. January.

Described from one moderately good specimen, its most serious defect being the broken proboscis. I am not sure it is a Kingia for there are *no* curved scales on the head, and the scales of the lateral abdominal spots are not outstanding, but it agrees with the description for this genus better than any other and I have therefor referred it here. The specimen was sent in a collection made by Capt. J. C. Gregory, M. C., U. S. A.

Stegomia quasinigritia sp. nov.

Male. Head black scaled except a very narrow median line of light scales, a white median spot at the point of the vertex, minute submedian white spots at the ocular margin, and a few white lateral scales: a few forked scales on the occiput; antennæ banded, verticels dark, first joint testaceous, enlarged, basal joint dark with numerous white, close-lying scales, especially on the median aspect; palpi long accuminate, dark brown with four large white spots, at the bases of the four distal joints; proboscis black, not so long as the palpi by nearly the length of their terminal joint; eyes dark; clypeus dark.

Thorax dark brown, prothoracic lobes with dark brown and white scales and brown bristles; mesonotum with a short median white line of slender curved scales at the cephalad margin, a few white scales near the wing joint, and also near the "bare space"; scutellum dark, the mid-lobe with dark brown flat scales, the lateral lobes white and the scales extremely long; pleura brown with a few white scales; metanotum a rich reddish brown.

Abdomen with dark brown scales and basal ochraceous bands, well marked on the 2nd, 3rd, 4th, and 5th segments, lacking on the distal segments; greyish lateral spots on some of the segments; venter heavily light banded on the 2nd, 3rd, 4th, and 5th segments, the rest mostly dark.

Legs—coxæ and trochanters testaceous with a few dark scales; femora dark except the very base, a line on the ventral aspect, and the apex which are white; tibiæ all dark; first tarsal basally white banded, broadly so on the hind legs, second and third minutely white at their bases on the fore and mid legs, broadly so on the hind legs, fourth and fifth brown on the fore legs, the fourth with a very small white basal spot on the mid legs, and mostly white on the hind legs, the fifth entirely white on the hind legs, femoral and tibial spines white; ungues unequal the larger uniserrate on mid and fore legs, simple on the hind legs.

Wings clear, brown scaled; 1st sub-marginal cell longer and slightly narrower than the 2nd posterior cell, twice as long as its petiole, its base slightly interior to that of the 2nd posterior; root of the 3rd longitudinal vein a little interior to the mid cross-vein and about the same length; posterior cross-vein one-third longer than the mid cross-vein and a little more than twice its own length distant; halteres with dark knob and light stem.

Length, 4 mm. and 2 for Proboscis—6 mm.

Habitat. Turucan, Mindanao, P. I. Taken. Nov.

Described from one specimen sent by L. F. Seith, Sgt. 1st Cl. H. C. It lies close to several of the dark *Stegomyiæ*, but seems to have enough differences to warrant describing as a new species.

Hodgesia niveocaputis n. sp.

Female. Head almost black, covered with white and very dark brown scales, the white scales forming a large median spot extending well around to the sides, where it almost joins a lateral white spot, and caudad, nearly to the margin of the occiput, the extent being partly governed by the direction of the light, brown scales and bristles on the occiput: antennæ brown, verticels, and pubescence brown, the hairs of the latter longer than in the usual forms, basal joint dark: proboscis brown, a little swollen at the apex, and a well marked bulb-like expansion at the base just anterior to the clypeus (dorsal aspect); eyes dark; clypeus testaceous.

Thorax shiny black; prothoracic lobes densely covered with white flat scales (as described for the type); mesonotum sparsely covered with small extremely slender dark brown curved scales; some brown bristles, near the scutellum and at the wing joint; scutellum with small flat dark brown scales and brown bristles; pleura with three white spots, one very near the wing joint; metanotum very dark. Abdomen covered with dark brown scales, and five lateral white spots, the latter occurring on the 1st, 2nd, 3rd, 5th, and 6th segments, those on the 3rd and 5th segments being much the more pronounced; venter practically white scaled, but brown in some lights.

Legs; coxæ and trochanters pale, with some white scales; femora very light lemonish white at the bases and ventrally, otherwise brown except in the hind legs, where they are light lemonish white both dorsally and ventrally, only the half their length, white at the apex, more marked on the hind legs; tibiæ all dark; first tarsals have a small basal white spot, larger on the hind legs and the remainder of the forelegs is dark; second tarsals on mid and hind legs with a basal white spot, the remainder of the mid-legs dark; third and fourth joints broadly white banded in the hind legs, the last joint pure white; fore and mid ungues uniserrate.

Wings clear, brown scaled; the cells long, 1st submarginal longer and slightly narrower than the 2nd posterior, double the length of its petiole, its base inside that of the 2nd posterior; root of the 3rd longitudinal vein and the mid cross-vein about equal in length and meet, posterior cross-vein a little longer, and more than twice its length distant; halteres have the stem light and knob dark.

Length 6.5 mm. with proboscis, 5.75 mm. without the proboscis.

Habitat. Mindanao, P. I. Taken. Nov.–Jan.

In general coloring and marking this suggests some of the *Stegomyia*, but besides the differences in cephalic scales, those on the scutellum are broader, and round-ended like those found in *Kingia*.

For only a few of these insects have the life-habits been worked out in any country, and in the Philippines only *M. Ludlowii* has been carefully studied. Banks found this Anopheline breeding indifferently in fresh or brackish water, and lately some interesting data as to *M. indefinita* have been received. It has been bred from larvæ taken from muddy puddles, quite at variance with our usual idea as to Anopheline habits and the latest collections have the memorandum, "from larvæ taken from an open drain, the water comes from bath houses and is of course more or less soapy." So far as I know this is the first instance reported of Anophelines breeding in dirty drain water.

Described from one specimen. The three species, Meijere's, Theobald's and this lie very close together, the color of the iridescent scales on the head and mesothorax being a possibly misleading characteristic, but the scutellum in this species is white scaled only on the mid-lobe, the scales on the lateral lobes being not only brown but smaller than those on the midlobe, and while this is a small difference it may serve to separate it from the others.

As I have only one specimen it has not seemed wise to dissect it, but the mouth parts as described by Meijere[1] and the peculiarities of the clypeus as noted above seem to me to be of more than generic value. The insect of course comes under Lutz' group *Culicimorphæ*, for though the proboscis is long, the lack of development of the maxillae and mandibles into the long processes found in what Lutz calls the *Euculicidæ* prevents the insect from using it as a piercing instrument. It, however, seems quite distinct in its peculiarities, and as I prefer to keep all the forms with Culicid wing venation under the *Culicidæ* the only way seems to be to create a new sub-family. I therefore propose to call this sub-family *Harpagomyinæ* n. sub-fam. with *Harpagomyia splendens* Meijere as the type for genus and species.

Duttonia alboannulis sp. nov.

Female. Head dark, with flat white scales forming a median line, a broad stripe of ochraceous and brown flat scales, a small brown spot and lateral white scales, a line of curved scales brown around the eyes, and verysmall curved scales among the forked brown and ochraceous scales on the occiput; brown bristles near the eyes; antennæ dark brown, verticels and pubescence brown, basal joint very dark, covered with brilliant white close-lying scales; palpi dark brown with brilliant white tips; proboscis dark brown; eyes dark brown; clypeus dark brown with white long spatulate scales.

Thorax almost black; prothoracic lobes with brilliant white flat scales and brown bristles; mesonotum entirely covered with slender dark brown curved scales except a few light scales at the nape, and a small spot of broader white and ochraceous curved scales just cephalad of the wing joint; scutelum dark, with brilliant broad white flat scales; pleura dark with several spots of white scales; metanotum dark brown.

Abdomen dark and covered with dark scales, large basal lateral white spots, and a few apical white scales on some segments, forming a very narrow band on the seventh segment.

Legs; coxæ and trochanters testaceous with brown and white scales; femora dark dorsally, ventrally light, and the hind femora are basally light for nearly one half their length, white at the apex, more marked on the hind legs; tibiæ all dark; first tarsals have a small basal white spot, larger on the hind legs and the remainder of the forelegs is dark; second tarsals on mid and hind legs with a basal white spot, the remainder of the mid-legs dark; third and fourth joints broadly white banded in the hind legs, the last joint pure white; fore and mid ungues uniserrate.

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[1] J. C. H. Meijere. Drei myrmekophile Diptern aus Java. Tidg. v. Entom., Vol. LII (1909).

Wings clear, brown scaled; the cells long, 1st submarginal longer and slightly narrower than the 2nd posterior, double the length of its petiole, its base inside that of the 2nd posterior; root of the 3rd longitudinal vein and the mid cross-vein about equal in length and meet, posterior cross-vein a little longer, and more than twice its length distant; halteres have the stem light and knob dark.

Length 6.5 mm. with proboscis, 5.75 mm. without the proboscis.

Habitat. Mindanao, P. I. Taken. Nov.–Jan.

In general coloring and marking this suggests some of the *Stegomyia*, but besides the differences in cephalic scales, those on the scutellum are broader, and round-ended like those found in *Kingia*.

For only a few of these insects have the life-habits been worked out in any country, and in the Philippines only *M. Ludlowii* has been carefully studied. Banks found this Anopheline breeding indifferently in fresh or brackish water, and lately some interesting data as to *M. indefinita* have been received. It has been bred from larvæ taken from muddy puddles, quite at variance with our usual idea as to Anopheline habits and the latest collections have the memorandum, "from larvæ taken from an open drain, the water comes from bath houses and is of course more or less soapy." So far as I know this is the first instance reported of Anophelines breeding in dirty drain water.

A LIST OF THE BEES OF THE GENUS *PERDITA* SMITH.

By T. D. A. Cockerell,

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The present list includes all the known species of Perdita, the genus being confined to North America, and only well developed in the arid southwest. The South American insects referred by Friese to *Perdita* belong to *Parafriesia*, a genus scarcely separable from *Calliopsis*. The Old World genus *Nomioides* has the closest possible superficial resemblance to *Perdita*, but is structurally quite distinct, having much in common with *Halictus*. The species of *Perdita* are mostly very small, and practically all are oligotropic, confining their visits to a single genus, or to a few closely allied genera. Occasionally specimens will be found on plants of quite diverse families, and this seems especially to occur when the proper food plant is not yet in bloom. Most of the species occur in late summer and autumn, but there is quite a series of spring-appearing forms. I have never taken any species both in spring and summer, but Mr. Viereck took *P. phaceliæ* in May and June, and *P. pectidis* in April and May, at Alamogordo, New Mexico, these being previously known as September bees. It is not known whether the September brood hibernates and reappears in spring, or there are two generations in the year.

Subgenera and Sections.

Cockerellia Ashmead, Psyche, 1898, p. 284. Type *hyalina.* A name for the group of *P. albipennis*, *verbesinæ*, *sparsa*, *utahensis*, etc.

Neoperdita Ashmead. The diagnosis seems to indicate species like *P. sphæralceæ*, but the designated type is *P. zebrata.*

Nomadopsis Ashmead. The assigned type was *P. zonalis*, but the specimens pertain to a different, undescribed species.

Philoxanthus Ashmead. Type *P. beata.*

For Ashmead's characterization of the above four groups, see Trans. Amer. Ent. Soc., XXVI (1899), pp. 84–85.

Perditella Cockerell. Type *P. larreæ;* also includes *P. marcialis*. For figure of venation see Proc. Acad. Nat. Sci., Phila., 1896, p. 62. Robertson has described *P. boltoniæ* (1902) as a *Perditella.*

PENTAPERDITA Cockerell and Porter. Type *P. albovittata.* Maxillary palpi 5-jointed; claws all cleft in males; simple in females.

TETRAPERDITA Cockerell and Porter. Type *P. sexmaculata.* Maxillary palpi 4-jointed; claws cleft in male, simple in female.

GEOPERDITA Cockerell and Porter. Type *P. chamæsarachæ.* Maxillary palpi rudimentary; labial palpi 3-jointed.

The last three, which should probably rank as genera, were described in Annals and Mag. of Nat. History, December, 1899, p. 415.

Tables.

(1) Cockerell, Proc. Acad. Nat. Sci., Philadelphia, 1896, pp. 45–52.

(2) Cockerell, Bull. Sci. Lab., Denison University, XI, pp. 52–59. (Species of New Mexico.)

(3) Cockerell, University of Colorado Studies, 1907, p. 247.

(4) Cockerell and Porter. Ann. and Mag. of Nat. History, December, 1899, pp. 414–415. (Table of measurements of labial palpi.)

(5) Cockerell, Entom. News, December, 1905, p. 331. (Species resembling *P. xanthismæ.*)

(6) Cockerell in Viereck, Entom. News, January, 1904, p. 22. (Yellow species.)

After each name is given the type, locality, and the collector of the type, if known.

List of Species.

Aeneifrons Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2, 4. Visits *Isocoma.*

Affinis Cresson 1878. Colorado (*Ridings*). Tab. 1, 2, 3, 4. Visits *Compositæ.*

Albipennis Cresson 1868. Between Fort Wallace, Colorado, and Fort Craig, New Mexico. (*S. Lewis.*) Tab. 1, 2. Visits *Helianthus.*

Albipennis helianthi Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Helianthus.*

Albipennis lingualis Cockerell 1896. Fort Collins, Colorado (*Baker*). A female variant.

Albipennis pasonis Cockerell 1896. El Paso, Texas (*Cockerell*). A form approaching *P. verbesinæ.*

Albovittata Cockerell 1895. San Augustine, New Mexico (*Cockerell*). Tab. 1, 2, 4. Visits *Ximenesia.*

Anogræ Cockerell 1902. Las Vegas, New Mexico (*Tuttle and Tipton*). Visits *Anogra.*

Arcuata Fox 1893. Calmalli Mines, Lower California (*Haines*). Tab. 1. Flies in April. .

Ashmeadi Cockerell 1899. S. José de Guaymas, Mexico (*Howard*). Flies in April.

Asteris Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Aster* and *Heterotheca.* Also in Arizona.

Austini Cockerell 1895. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Gutierrezia,* and rarely *Isocoma..*

Baccharidis Cockerell 1900. Tempe, Arizona, October (*Cockerell*). Visits *Baccharis.*

Baileyæ Cockerell 1909. Mesilla, New Mexico (*Cockerell*). Visits *Baileya.*

Bakeræ Cockerell 1896. Fort Collins, Colorado (*Baker*). Tab. 1. Apparently distinct by male genitalia, but otherwise intergrades with *P. zebrata.* Visits *Solidago.*

Beata Cockerell 1896. Las Cruces, New Mexico (*A. M. Holt*). Tab .1, 2, 6. Visits *Ximenesia.* A bright canary-yellow species.

Bigeloviæ Cockerell 1896. Albuquerque, New Mexico (*Cockerell*). Tab. 1, 2, 4. Visits *Isocoma.*

Biparticeps Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Pectis.*

Bishoppi Cockerell 1906. Paris, Texas, August (*Bishopp*). Visits *Heterotheca.* As to intergrades or hybrids with *P. ignota, cf.* Entomologist, 1906, p. 149.

Boltoniæ Robertson 1902. Carlinville, Illinois (*Robertson*). Visits *Boltonia.* Cheeks of male dentate.

Bradleyi Viereck 1907. Clementon, New Jersey (*J. C. Bradley*). Flies in May.

Bruneri Cockerell 1897. West Point, Nebraska, August (*Bruner*). Visits *Solidago* and *Grindelia; cf.* Ent. News, February, 1907, p. 55.

Californica Cresson 1878. California (*Edwards*). Tab. 1.

Callicerata Cockerell 1897. Las Cruces, New Mexico, August (*Townsend*). Tab. 2. Visits *Baileya.* Rarely at *Atamosco; cf.* Can. Ent., 1901, p. 283. Female; Proc. Acad. Nat. Sci., Phila., 1897, p. 357. Remarkable for having more light color on the face of the female than the male.

Callicerata chrysoceras Cockerell 1897. Near Las Cruces, New Mexico (*Cockerell*). Tab. 2.

Callicerata leucura Cockerell 1909. Mesilla, New Mexico (*Cockerell*). Perhaps a hybrid, *callicerata* × *pallidior*. Visits *Baileya*.

Cambarella Cockerell 1906. Paris, Texas, August 26 (*Bishopp*). Visits *Heterotheca*. Allied to *P. mellina*.

Canina Cockerell 1895. Santa Fé, New Mexico (*Cockerell*). Identical with *P. zebrata*.

Cephalotes Cresson 1878. Nevada (*Hy. Edwards*). Tab. 1. Head of male very large.

Chamæsarachæ Cockerell 1896. Albuquerque, New Mexico (*Cockerell*). Tab. 1, 2, 5. Visits *Chamæsaracha*.

Chrysophila Cockerell 1896. Organ, New Mexico (*Cockerell*). Tab. 2. Visits *Ximenesia* and *Hymenoxys*.

Citrinella Graenicher 1910. North Hudson, Wisconsin (*Graenicher*). Allied to *P. perpallida*. Visits *Petalostemon*.

Cladothricis Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Cladothrix*, and sometimes *Pectis*, *Isocoma* and *Gutierrezia*.

Claypolei Cockerell 1901. Mt. Lowe, California (*Cockerell*). Visits *Eriogonum polifolium*.

Cockerelli Crawford 1906. West Point, Nebraska (*Crawford*). Visits *Grindelia* and also *Solidago*. Resembles *P. bruneri*.

Coreopsidis Cockerell 1906. Cotulla, Texas, May 5 (*W. D. Pierce*). Visits *Coreopsis*.

Crassiceps Cockerell 1896. Albuquerque, New Mexico (*Cockerell*). Tab. 1, 2.

Crawfordi Cockerell 1901. Lincoln, Nebraska (*J. C. Crawford*). Visits *Grindelia*.

Crotonis Cockerell 1896. Albuquerque, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Croton*.

Dallasiana Cockerell 1906. Dallas, Texas, July (*W. W. Yothers*). Visits *Helianthus*. Runs in tables to vicinity of *hirsuta*.

Dasylirii Cockerell 1907. Alamogordo, New Mexico, June (*Viereck*). Visits *Dasylirion*. Allied to *P. luciæ*.

Dolichocephala Swenk and Cockerell 1907. Warbonnet Cañon, Nebraska (*Carriker*). Visits *Helianthus*. Peculiar for its long head.

Dubia Cockerell 1896. Glenwood Springs, Colorado (*Gillette*). Tab. 1. Allied to *P. zebrata*.

Erigeronis Cockerell 1897. Mesilla, New Mexico (*Cockerell*). Tab. 2. Male of *P. fallax; cf.* Ent. News, 1907, p. 55.

Exclamans Cockerell 1895. Las Cruces, New Mexico (*Jessie Casad*). Tab. 1, 2. At flowers of *Prosopis* in May. Doctor Howard took it at S. José de Guaymas, Mexico.

Fallax Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Very close to *P. affinis*. Visits *Compositæ*.

Florissantella Cockerell 1906. Florissant, Colorado (*Cockerell*). Visits *Eriogonum*.

Foxi Cockerell 1895. Santa Fé, New Mexico (*Cockerell*). Tab. 1, 2. Peculiar for its orange-rufous legs, and black unbanded abdomen.

Gerhardi Viereck 1904. East Chicago, Indiana (*Gerhard*). Tab. 6. Visits *Monarda*. A yellow species.

Grandiceps Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2, 4. Visits *Solidago* early in September.

Gutierreziæ Cockerell 1896. Albuquerque, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Gutierrezia*. Related to *P. bigeloviæ*.

Halictoides Smith 1853. North America. Tab. 1. Nearest to *P. æneifrons; cf.* Canad. Entom., 1904, p. 303. This is the type of the genus.

Heliotropii Cockerell 1900. Juarez, Mexico (*Cockerell*). Visits *Heliotropium*.

Heterothecæ Cockerell 1900. Tempe, Arizona (*Cockerell*). Visits *Heterotheca*. Resembles *P. ignota*.

Hirsuta Cockerell 1896. Las Cruces, New Mexico (*A. M. Holt*). Tab. 1, 2. Flies early in May.

Howardi Cockerell 1899. S. José de Guaymas, Mexico (*Howard*). Tab. 6. Bright lemon-yellow; flies in spring.

Hyalina Cresson 1878. Colorado (*Ridings and Morrison*). Tab. 4. Male of *P. albipennis*.

Ignota Cockerell 1896. Mesilla, New Mexico (*Cockerell*). Tab. 2, 3. Visits *Compositæ*. Ranges to Nebraska.

Interrupta Cresson 1878. California (*Crotch*). Tab. 1.

Jonesi Cockerell 1906. Rosser, Texas (*Bishopp*). Visits *Monarda;* var. a. at *Petalostemon*. Allied to *P. octomaculata* and *affinis*.

Lacteipennis Swenk and Cockerell 1907. Niobrara, Nebraska

(*Swenk*). Visits *Helianthus*. Allied to *P. albipennis*. Also in Colorado.

Larreæ Cockerell 1896. San Marcial, New Mexico (*Cockerell*). Tab. 1, 2, 4, 6. Small orange-yellow species; visits *Covillea*. Although several species of *Perdita* are dependent on *Covillea*, the plant can exist without these bees, as is shown by its occurrence in South America, where *Perdita* is absent.

Larreæ modesta Cockerell 1897. Mesilla Park, New Mexico (*Cockerell*). Tab. 2, 6. Head of male not nearly so large. Visits *Covillea*.

Larrearum Cockerell 1896. San Marcial, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Covillea*.

Laticeps Cockerell 1896. Las Cruces, New Mexico (*A. M. Holt*). Tab. 1, 2. Visits *Ximenesia*.

Laticincta Swenk and Cockerell 1907. Glen, Sioux Co., Nebraska (*H. S. Smith*). Visits *Helianthus*.

Lepachidis Cockerell 1896. Santa Fé, New Mexico (*Cockerell*). Tab. 1, 2. Very close to *P. albipennis*. Visits *Ratibida*.

Lepidii Cockerell 1907. Florissant, Colorado (*Rohwer*). Visits *Lepidium*.

Luciæ Cockerell 1899. S. José de Guaymas, Mexico (*Howard*). Flies in April. Allied to *P. martini*.

Luteiceps Cockerell 1896. Glenwood Springs, Colorado (*Gillette*). Tab. 1. Flies in August. Related to *P. martini*.

Luteola Cockerell 1894. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2, 4, 6. A yellow species, visiting *Isocoma* and *Gutierrezia*. Also occurs in Nebraska.

Maculigera Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 2. Visits *Salix* in May. (Ent. News, 1896, p. 255.)

Maculipennis Graenicher 1910. Milwaukee, Wisconsin, August (*Graenicher*). Stigma with a black spot.

Maculipes Cockerell 1896. Las Cruces, New Mexico (*A. M. Holt*). Tab. 1, 2. Visits *Isocoma*. Very close to *P. bigeloviæ*.

Marcialis Cockerell 1896. San Marcial, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Covillea*. Related to *P. larreæ*.

Martini Cockerell 1895. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Flies in April.

Maura Cockerell 1901. Cedar Bluffs, Nebraska (*Bruner*). Visits *Physalis*, and sometimes *Aster*.

Megacephala Cresson 1878. Texas (*Heiligbrodt*). Tab. 1. Male of *texana*.

Melanostoma Swenk and Cockerell 1907. Glen, Sioux Co., Nebraska (*P. R. Jones*). Visits *Gutierrezia*.

Mellina Cockerell 1900. Phoenix, Arizona (*Cockerell*). Tab. 5. Visits *Heterotheca*.

Mentzeliæ Cockerell 1896. Santa Fé, New Mexico (*Cockerell*). Tab. 1, 2, 4. Visits *Nuttallia*.

Mentzeliarum Cockerell 1897. Riley's Ranch, Organ Mts., New Mexico (*Cockerell*). Tab. 2, 4. Visits *Nuttallia*.

Mentzeliarum lauta Cockerell 1905. Near Tularosa, New Mexico (*E. O. Wooton*). Visits *Nuttallia*.

Mexicanorum Cockerell 1896. Mexico. Tab. 1. Peculiar for its yellow postscutellum.

Monardæ Viereck 1904. Riverton, New Jersey (*Viereck*). Visits *Monarda*.

Nebrascensis Swenk and Cockerell 1907. Neligh, Nebraska (*M. Cary*). Visits *Helianthus*.

Nevadensis Cockerell 1896. Nevada. Tab. 1.

Nitidella Cockerell 1895. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Isocoma*.

Novæangliæ Viereck 1907. Poquonock, Ct. (*Viereck*). Flies in June and July. Also in Massachusetts.

Nuda Cockerell 1896. New Mexico. Tab. 1, 2. Resembles *P. phymatæ*, but much larger.

Numerata Cockerell 1895. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Salix* in May.

Obscurata Cresson 1878. Georgia. Tab. 1. Visits *Hydrocotyle*. Also occurs in Florida.

Octomaculata Say 1824. United States. Tab. 1. Visits *Compositæ;* Illinois to Atlantic coast.

Pallidior Cockerell 1896. Albuquerque, New Mexico (*Cockerell*). Tab. 1, 2. Very near to *P. mentzeliæ*. Visits *Nuttallia*.

Pallidior pulchrior Cockerell 1896. Albuquerque, New Mexico (*Cockerell*). Tab. 1, 2. Cheeks of male spined.

Pallidipennis Graenicher 1910. Mouth of Yellow River, Wisconsin (*Graenicher*). Group of *P. albipennis*.

Pectidis Cockerell 1896. Las Cruces, New Mexico (*Cockerell*).

Tab. 1, 2. Visits *Pectis*, and sometimes *Wedeliella* and *Kallstroemia*.

Pellucida Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Isocoma*.

Perpallida Cockerell 1901. Lehigh, Nebraska, July (*Cary*). Tab. 6. Visits *Petalostemon*. Close to *P. wootonæ; cf.* Ent. News, 1907, p. 57.

Perpulchra Cockerell 1896. Las Cruces, New Mexico (*A. M. Holt*). Tab. 1, 2. Visits *Ximenesia*. Male: Annals and Mag. of Nat. History, April 1897, p. 398.

Phaceliæ Cockerell 1898. La Cueva, Organ Mts., New Mexico. (*Townsend*). Tab. 4. Visits *Phacelia*.

Phymatæ Cockerell 1895. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Isocoma* and *Gutierrezia*.

Pratti Cockerell 1906. Corpus Christi, Texas, October (*F. C. Pratt*). Probably visits *Helenium*. Allied to *P. crawfordi*.

Pulchrior Cockerell 1896. Var. of *pallidior*.

Punctata Cockerell 1896. Fort Collins, Colorado (*Baker*). Tab. 1. Visits *Solidago*.

Punctosignata Cockerell 1895. Las Cruces, New Mexico (*Jessie Casad*). Tab. 1, 2. At flowers of *Prosopis*.

Quadrangularis Cockerell 1907. Alamogordo, New Mexico (*Viereck*). Flies in May.

Rectangulata Cockerell 1896. Fort Collins, Colorado (*Baker*). Tab. 1. Visits *Solidago* in August.

Rehni Cockerell 1907. Alamogordo, New Mexico (*Viereck*). In Tab. 1 runs to *pallidior*, but distinguished by smaller size, much darker abdomen, color of antennæ, etc. Flies early in June.

Rhodura Cockerell 1897. Embudo, New Mexico, September 25, (*Cockerell*). Tab. 2, 4, 5. Visits *Chrysothamnus*. Resembles *P. crotonis* in the color of the abdomen.

Rhois Cockerell 1901. San Diego, California (*Cockerell*). Visits *Rhus laurina*.

Rhois reducta Cockerell 1901. San Diego, California (*Cockerell*). Female variant.

Salicis Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2, 4. Visits *Salix* in May.

Semicærulea Cockerell 1896. San Marcial, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Covillea*.

Semicrocea Cockerell 1895. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2, 4, 5. Visits *Compositæ*.

Senecionis Cockerell 1896. Las Cruces, New Mexico (*E. O. Wooton*). Tab. 1, 2. Visits *Senecio* in October.

Sexmaculata Cockerell 1895. Santa Fé, New Mexico (*Cockerell*). Tab. 1, 2, 4. Visits *Chamæsaracha*.

For figure of mouth-parts, see Annals and Mag. of Nat. History, December, 1899, p. 416.

Sidæ Cockerell 1897. Mesilla, New Mexico (*Cockerell*). Tab. 2, 4, 5. Visits *Sida hederacea*.

Snowii Cockerell 1896. Estes Park, Colorado (*F. H. Snow*). Tab. 1. Also at Santa Fé, New Mexico. Male; Psyche, 1910, p. 244. Visits *Grindelia*.

Solitaria Cockerell 1897. Soledad Cañon, Organ Mts., New Mexico (*Townsend*). Tab. 2. Visits *Pectis*.

Sonorensis Cockerell 1899. S. José de Guaymas, Mexico (*Howard*). Flies in April.

Sparsa Fox 1893. Margarita Island, Lower California (*Haines*). Tab. 1. Allied to *P. albipennis*, but flies in March.

Sphæralceæ Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2, 4. Visits *Sphæralcea*. Rarely at *Nuttallia; cf*. Jour. N. Y. Ent. Soc., 1896, p. 206.

Sphæralceæ alticola Cockerell 1896. Santa Fé, New Mexico (*Cockerell*). Visits *Sphæralcea*.

Sphæralceæ suffusa Cockerell 1896. Santa Fé, New Mexico (*Cockerell*). A variant of *alticola*.

Stottleri Cockerell 1896. Tularosa Creek, New Mexico (*Cockerell*). Tab. 2. Visits *Chrysothamnus* and *Gutierrezia*. Male; Entomologist, 1904, p. 6.

Stottleri flavida Swenk and Cockerell 1907. Glen, Nebraska (*Bruner*). Visits *Gutierrezia* and *Solidago*.

Subfasciata Cockerell 1897. Embudo, New Mexico, September 25 (*Cockerell*). Tab. 2. Visits *Chrysothamnus*.

Tarda Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Gutierrezia*.

Texana Cresson 1878. Texas (*Heiligbrodt*). Tab. 1.

Tortifoliæ Cockerell 1906. Florissant, Colorado (*Cockerell*). Visits *Chrysothamnus*. Possibly a mutation of *florissantella; cf*. Entom., 1907, p. 267.

Townsendi Cockerell 1896. White Sands, New Mexico (*Townsend*). Tab. 2, 4. Visits *Chrysothamnus*. Also found at Embudo, New Mexico.

Trisignata Cockerell 1896. California. Tab. 1. Wings yellowish; abdomen without markings.

Utahensis Cockerell 1896. Southwest Utah (*Palm*). Allied to *P. albipennis*.

Vagans Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Ximenesia*.

Ventralis Fox 1893. Margarita Island, Lower California (*Haines*). Tab. 1. Flies in March.

Verbesinæ Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2, 4. Visits *Ximenesia*.

Verbesinæ cyanella Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Male variant.

Verbesinæ intermedia Cockerell 1896. Las Cruces, New Mexico (*C. Rhodes*). Female variant.

Verbesinæ maculata Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Male variant.

Verbesinæ nigrior Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Female variant.

Vespertilio Cockerell 1896. Las Cruces, New Mexico (*Cockerell*). Tab. 1, 2. Visits *Chrysopsis*. Female; Entomologist 1906, pp. 148–149.

Vierecki Cockerell 1907. Alamogordo, New Mexico, April and May (*Viereck*). Related to *P. exclamans*.

Wilmattæ Cockerell 1906. Florissant, Colorado (*W. P. Cockerell*). Visits *Phacelia alba*.

Wootonæ Cockerell 1898. Near Tularosa, New Mexico (*E. O. Wooton*). Tab. 2, 3, 4, 6. Visits *Nuttallia*. Also occurs in Colorado and Nebraska.

Xanthismæ Cockerell 1905. Goldthwaite, Texas (*Crawford*). Tab. 5. Visits *Xanthisma*.

Xanthismæ sideranthi Cockerell 1906. Ennis, Texas, September (*Bishopp*). Visits *Sideranthus* and *Isopappus*.

Zebrata Cresson 1878. Colorado (*Ridings and Morrison*). Tab. 1, 2, 3, 4. Visits *Peritoma*.

Zonalis Cresson 1879. Nevada (*Morrison*). Tab. 1.

A NEW GENUS OF REDUVIIDÆ.

By E. Bergroth,

Fitchburg, Mass.

Among some Hemiptera received some time ago from the desert regions of northwest Argentina, there was a very remarkable Reduviid, by its color, the structure of the short head and broad, laterally not sinuated but reflexed pronotum and the whole facies closely resembling a Coreid. So strong is the likeness that I had placed it among my material of Coreidæ, and it was not until an attempt to determine it that its Reduviid nature revealed itself.

Psammolestes gen. nov.

Corpus robustum, oblongo-ovatum, opacum. Caput latitudine sua paullulo longius, pronoto paullo brevius, parte postoculari anteoculari triplo breviore et nonnihil latiore, pone oculos lateribus callosa, basi subito constricta, parte anteoculari aeque lata ac longa, inter oculos et apicem tuberculorum antenniferorum subparallela, tylo apicem truncatum versus dilatato, jugis apicem versus divergentibus, tylo aeque longis, oculis magnis, subglobosis, maximam partem altitudinis capitis occupantibus, ocellis atque oculis aeque late distantibus, ad hos valde approximatis, tuberculis antenniferi se supero visis libere porrectis et breviter cylindricis, antennis ab oculis quam ab apice capitis paullo longius insertis, brevibus, basin pronoti haud attingentibus, articulo primo brevissimo, incrassato, latitudine sua paullo longiore, apicem capitis haud attingente, articulo secundo latitudini spatii interocularis cum uno oculo subaeque longo, tertio secundo nonnihil breviore, quarto tertio parte tertia breviore, rostro valde depresso, spatio interoculari inferiore latiore, gulam subtangente, marginem anticum prosterni attingente, articulo primo medium partis anteocularis attingente, secundo primo fere duplo longiore, tertio primo paullo breviore. Pronotum transversum, apice vix sinuatum, marginibus lateralibus rectis, reflexis, antice in tuberculum porrectum breviter conicum productis, angulis humeralibus et basalibus rotundatis, non prominulis, impressione transversa disci ante medium sita sat profunda sed latera non attingente, carinis duabus longitudinalibus parallelis obtusis interrupta, his carinis antice in medium lobi antici continuatis, postice etiam in lobum posticum breviter productis, deinde retrorsum leviter divergentibus et sensim obsolescentibus. Scutellum aequilateraliter triangulare, leniter convexum, apice horizontali, vix producto. Sulcus stridulatorius prosterni latus, leviter impressus. Mesosternum medio gibbum, parte gibbosa longitudinaliter leviter impressa. Hemelytra abdomine angustiora. Abdomen lateribus integrum. Pedes breves, antici leviter, posteriores magis distantes, anteriores subaegue longi quam postici breviores, femoribus omnibus crassiusculis, inermibus, posticis medium ventris nonnihil superantibus.

Allied to the genus *Conorhinus* Lap., but at once distinguished by the structure of the head and pronotum, the gibbous mesosternum, and a quite different *facies*.

Psammolestes coreodes sp. nov.

Luride testaceus, ubique plus minusve fusco-conspurcatus, cellulis membranæ maxima parte fuscis, margine abdominis in omnibus segmentis maculis duabus oblongis nigris notato, una ad basin, altera mox pone medium, ventre lineis tribus longitudinalibus fuscis signato, linea media parum distincta, lineis exterioribus irregularibus, hic et illic interruptis. Antennae breviter puberulae, articulis duobus ultimis praeterea setis rigidis semierectis parce vestitis, his articulis (basi tertii excepta) et apice articuli secundi infuscatis. Rostrum setulosum. Pronotum longitudine media 2-3 latius, lobo postico antico duplo et dimidio longiore. Hemelytra (♀) abdomine paullo breviora. Alae dilute lacteae. Segmentum sextum ventrale (♀) medio segmentis quinto et quarto dimidioque tertii unitis aeque longum. Pedes densius fusco-variegati, tibiis apice fuscis. Long. ♀ 15 mm.

Argentina (Chaco de Santiago del Estero, Rio Salado).

N. B. Attempts have been made of late to use the name *Triatoma* Lap., instead of *Conorhinus*. As the name *Triatoma* was proposed under the misconception that the antennæ are three-jointed in this genus, and as it therefore was rejected by Laporte himself as inappropriate and misleading and altered to *Conorhinus* in the same paper, there is, however, no sufficient reason to discard the name by which the genus has been known nearly eighty years.

HOSTS OF INSECT EGG–PARASITES IN NORTH AND SOUTH AMERICA. II.[1]

By A. Arsène Girault,
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The additional records of the hosts of insect egg-parasites in North and South America given beyond, comprise those overlooked previously (Girault, 1907) and those recorded in the literature during the years 1907 to 1910, besides a few as yet unrecorded which are marked with an asterisk in the list to follow. This paper should be considered as a sequel to the first one, and the same arrangements hold here.

Our knowledge in regard to the hosts of hexapod egg-parasites is increasing rapidly, but as far as is yet known, no true insect egg-parasites are other than hymenopterous[2] and I have but two additional groups to add to those given in 1907 (pp. 28–29), namely the Tetrastichini and Miscogasterini of the Chalcidoidea[3]; the former group may prove to be hyperparasitic on the primary egg-parasites but certainly not always. *Pentarthron minutum* (Riley) still maintains the lead as our most prominent, common and widespread parasite of the eggs of insects, having to date been recorded from thirty or more hosts in North America as well as from several species of the pyralid genus *Omiodes* (*meyricki* Swezey, *blackburni* [Butler], *accepta* [Butler]) in the Hawaiian Islands, where it was introduced by Albert Koebele about 1900 (Swezey, 1907, pp. 46–47); also in Java it attacks *Diatræa striatalis*, and in New Zealand, *Carpocapsa pomonella* Linn. With one or two exceptions, its hosts are all insects of the first economic importance, such as the codling moth, the cotton bollworm, the cotton-leaf caterpillar, the brown-tail moth, the West Indian sugarcane borer and so on. It stills confines itself to the Lepidoptera and Hymenoptera. *Phanurus tabanivorus* Ashmead is now known to attack Tabanidæ other than *Tabanus atratus* Fabr., probably some other species of the same genus or *Chrysops flavidus* Wied. (Hine 1907.) The genus *Aphanogmus* Thomson, recorded from the eggs of *Tibicen septendecim* (Linn.), is most probably not an egg-parasite but a larval parasite of Cecidomyidæ (*cf.* Ashmead, 1893, p. 451; Chittenden, 1909, p. 6) especially since Marlatt (1907, p. 129) records predaceous larval Cecidomyids on the eggs of the periodical cicada, and since the subfamily to which the genus belongs is usually parasitic on the larvæ of Diptera. The records of *Aphanogmus floridanus* Ashm. from the eggs of the *Cicada* appear to be based on a supposition.

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[1] Part I appeared in Psyche, Vol. XIV, pp. 27–39.

[2] I am aware of the following sentences of Aaron (1890): "Finally, we must consider the enemies of the Odonata. In the egg state we have found a small red mite, an Arachnid, which skims rapidly over the water in search of an Odonat egg, upon which it either deposits an egg or excavates it for immediate nourishment. A minute Dipteron, genus unknown, was also seen to oviposit on the egg of Diplax." I know of a true dipterous parasite on *Fidia* eggs, observed by Mr. Paul R. Jones of the Bureau of Entomology, but unfortunately not reared to maturity. See Johnson and Hammar, 1910, pp. 55–57, fig. 26. As yet, however, no definite records of true dipterous egg-parasites are known to me.

[3] Also perhaps the Pediobiini of the Entedoninæ.

Of the insect hosts of the egg-parasites, one order, Platyptera, is added to those previously given (Girault, 1907, p. 29), while definite, previously overlooked, records concerning the Odonata are included. Of the hosts known to be parasitized, the parasite unknown, mention may be made of *Cecidomyia* (?) *foliora* Russell and Hooker (1908); *Notolophus oslari* Barnes in Colorado (Hopkins, 1907, p. 143); *Malacosoma californica* (Pack.) and *M. constrictor* (Stretch) (Isaacs, 1905, p. 102); *Craponius inæqualis* (Say) (Brooks, 1906, p. 240). In passing, I wish to question the record of the eulophid parasites (*Pediobius* gen. et sp. nov. *Tetrastichinæ*) recorded from the eggs of *Eriocampoides limacina* Retzius by Lawrence (1904); entedonines and tetrastichines are often reared from minute leaf-miners, cecidomyids and the like and none of the records so far concerning this host are free from suspicion in respect to the presence of these incidental hosts.[1] *Westwoodella* Ashmead is parasitic on jassid eggs in the stems of grasses.

Subsequently, the scope of the list will be enlarged to include the world, as it is impossible to ignore the fact that geographical boundaries mean but little in this connection.

Secondary parasitism with egg-parasites was certainly but little known up to several years ago. I had often wondered why this phenomenon did not occur. Several cases are now on record, and even tertiary parasitism, now, is also known to occur.

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[1] However, in regard to this, compare the record of a Closterocerus from the same host as given below. The Pentarthron was reared at the same time and the former may be secondary, its host the latter species. I think both are primary, however.

HOSTS AND THEIR PARASITES.

COLEOPTERA.

HOST.	PARASITE.	AUTHORITY.
Attelabus analis Illiger	*Poropœa attelaborum* Girault	Girault, MS. notes 1910, (U. S. N. M.).
Calligrapha bigsbyana Kirby	*Erixestus winnemana* Crawford	Crawford, 1910, p. 88.
Calligrapha scalaris Lec.	*Erixestus winnemana* Crawford	Crawford, 1910, p. 88.
Crioceris asparagi Linn.	*Tetrastichus asparagi* Crawford	Crawford, 1909[a], p. 150.
Galerucella luteola Müll.	*Tetrastichus xanthomelanæ* Rondani[1]	Howard, 1908, p. 281; fig. 7. Marlatt, 1908, p. 4.
Tyloderma foveolatum Say	*Anaphoidea sordidata* Girault	Girault, 1909[b], p. 171.

In the *Coleoptera*, page 29 of the first part of the list, the following changes have become necessary:

Anaphes conotracheli read *Anaphoidea conotracheli.*
Brachista fidiæ read *Lathromeris fidiæ.*
Tachypterus read *Tachypterellus.*

HEMIPTERA.

HOST.	PARASITE.	AUTHORITY.
Aphis pomi Dr. Geer	?*Anagrus spiritus* Girault	Girault, MS. notes, 1909, (C. P. Gillette).
Balclutha impicta	*Abbella subflava* Girault	Id. (F. M. Webster).
Brochymena obscura	?*Trissolcus euschisti* Ashm.	Cockerell, 1897, p. 26.
Ceresa bubalus Fabr.	**Gonatocerus dolichocerus* Ashm. MS.	Girault, MS. notes, 1911, (U. S. N. M.).
Ceresa taurina Fitch	*Ittys ceresarum* Ashm.	Girault MS. notes, Illinois, 1908.
	Polynema striaticorne Girault	Girault, MS. notes, 1910, (N. Y. Exp. Sta.).
Dorycephalus platyrhynchus Osborn	?*Oligosita americana* Ashm.	Girault, 1909[a].
Enchenopa binotata Say	**Gonatocerus* species	Girault, MS. notes, 1908, (J. J. Davis).
	Polynema enchenopæ Girault *P. consobrinus* Girault MS.	Girault, MS. notes, 1908, (J. J. Davis).
Euschistus servus Say	*Telenomus ashmeadi* Morrill[2]	Morrill, 1907, p. 421.
Thyantha custator Fabr.	*Telenomus ashmeadi* Morrill[2]	Morrill, 1907, p. 421.
Tibicen septendecim Linn.	4 chalcidoids (3 new to the host).	Marlatt, 1907, pp. 130–131.

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[1] Introduced artificially from Europe. This may be (Tetracampe) *Tetrastichus gallerucæ* (Boyer de Fonscolombe). Rondani did not describe a species called *xanthomelanæ* but in 1877 listed and figured *Oömyzus gallerucæ* Fonscolombe, but his figures do not agree with those of Howard (1908). However, Marchal (1905) discusses this point and the suggestion is given here without study.

[2] In laboratory.

In the *Hemiptera*, pages 30–31 of the first part of the list, the following changes have become necessary:

Anastatus giraulti Ashmead is a *Nomen nudum.*

Trichogramma ceresarum read *Ittys ceresarum.*

Polynema (*Cosmocoma*) sp. nov. read *Polynema striaticorne* Girault.

Coccus hesperidum Linnæus—The parasite *Trichogramma. flavum* Ashmead listed under this host is an unknown Aphelinine, thus doubtless not an egg-parasite; the record should be expunged.

Homalodisca triquetra Fabricius—The parasite *Oöctonus homalodiscæ* Ashmead is a *nomen nudum.*

HYMENOPTERA.

HOST.	PARASITE.	AUTHORITY.
Cimbex americana Leach.	*Pentarthron minutum* Riley	Severin and Severin, 1908, pp. 68–70.
	Nesomyia cimbicis Brues	Brues, 1908, p. 162.
Eriocampoides limacina Retzius	**Pentarthron minutum* Riley	Girault, MS. notes, 1909, (R. L. Webster).
	**Closterocerus cinctipennis* Ashm.	Girault, MS. notes, 1909, (R. L. Webster).

In the *Hymenoptera*, page 32 of the first part of the list, the following emendations have become necessary:

Trichogramma minutum and *T. pretiosum* read *Pentarthron minutum* (Riley) throughout. *Anagrus columbi* Perk. = *Armatus* Ashm.

Omit entirely *Isosoma* spp. and the parasites recorded from them. All of these parasites are doubtless from jassid eggs. See foregoing.

Eriocampoides limacina Retzius.—The parasite "Encyrtus" species is doubtless *Pentarthron minutum* (Riley), referred to thus by Peck (1799).

LEPIDOPTERA.

HOST.	PARASITE.	AUTHORITY.
Agraulis vanillæ Linn.	**Pentarthron minutum* Riley	Girault, MS. notes, 1910, (Bur. Ent.).
Anisota senatoria Smith and Abbot	**Pentarthron minutum* Riley	Girault, MS. notes, 1910, (Bur. Ent.).
(*Archips*) *Cacœcia rosaceana* Harris[1]	**Pentarthron minutum* Riley	Girault, MS. notes, 1908.
Carpocapsa pomonella Linnæus	*Anaphes gracilis* How.	Girault, MS. notes, 1911, (U. S. N. M.).

HOST.	PARASITE.	AUTHORITY.
Datana integerrima Grote and Robinson	**Pentarthron minutum* Riley	Girault, MS. notes, 1910, (Bur. Ent).
Diatræa saccharalis Fabricius	*Pentarthron minutum* Riley	Koebele, 1908, p. 91.[10]
	Chalcidoid	Id. Ib., pp. 91–92.
Euproctis chrysorrhæa Linn.	*Telenomus phalænarum* Nees[2]	Howard, in Kirkland, 1907, p. 123.
	Pentarthron minutum Riley	Fiske, 1910.
	**Pentarthron euproctidis* Girault[11]	Girault, MS. notes, 1910. (Bur. Ent.).
Hemerocampa leucostigma Smith and Abbot.	*Telenomus dalmani* Ratz	Brues, 1910, p. 107.
Heterocampa guttivitta Walker	*Telenomus graptæ* Howard	Fiske and Burgess, 1910, p. 390.
Hyphantria textor Harris	**Pentarthron minutum* Riley	Girault, MS. notes, 1910, (Bur. Ent.).
Malacosoma disstria Hübn.	*Oöencyrtus clisiocampæ* Ashm.	Ashmead, 1900.[1]
Meliana albilinea Hübn.	*Pentarthron retorridum* Girault	Girault, MS. notes, 1910, (R. L. Webster).
Notolophus oslari Barnes	*Telenomus coloradensis* Crawford	Crawford, 1909[b], pp. 206–207.
Porthetria dispar Linn.	*Schedius kuvanæ* Howard[9];[7]	Howard, 1910, pp. 3–4.
	Tyndarichus navæ Howard[8]	Id. Ib. pp. 6–7.[7];[8]
	Antatus bifasciatus Fonscolombe[9]	Id. Ib., pp. 7–8.[2];[7]
	Perissopterus javensis Howard	Id. Ib., pp. 11–12.[7]
	Telenomus new species	Id. Ib., p. 12.[3]
Smerinthus astylus Drury	*Anastatus pearsalli* Ashm.	Ashmead, 1898, p. 24.

Corrections to Lepidoptera pages 32–35.

Trichogramma pretiosum, *T. intermedium*, *T. minutum*, *T. minutissimum* should read throughout *Pentarthron minutum* (Riley).

Calpodes ethilius Cramer—The "Trichogramma" species is *Pentarthron minutum* (Riley).

Hemerocampa leucostigma Sm. and Ab.—The parasites *Trichogramma fraternum* Fitch and *T. orgyiæ* Fitch are eulophids and not egg-parasites.

NEUROPTERA.

HOST.	PARASITE.	AUTHORITY.
Chauliodes rastricornis Rambur.	*Pentarthron minutum* Riley	Needham and Betten, 1901, p. 547.

ODONATA.

HOST.	PARASITE.	AUTHORITY.
Lestes uncala Kirby *L. unguiculata* Hagen[3]	*Brachistella acuminata* Ashm. *Centrobia odonatæ* Ashm. *Polynema needhami* Ashm. *Hyperteles polynemæ* Ashm.[4] *Tetrastichus polynemæ* Ashm.[5]	Ashmead, 1900[b]. Needham, 1900. Needham, 1903, p. 230.
	ORTHOPTERA.	
Anazipha exigua Say	*Polynema bifasciatipenne* Girault	Girault, 1908[a].
Mantis sp.	*Eupelmus brevicauda* Gahan	Gahan, 1910, p. 205.
Oecanthus niveus Deg. Geer	*Polynema bifasciatipenne* Girault	Girault, 1910, p. 255.
Stagmomantis carolina Linn.	*Eupelmus mantis* Ashm.	Ashmead, 1885, p. xv.
	PLATYPTERA.	
Cæcilius aurantiacus Hagen	*Alaptus cæcilii* Girault[6]	Girault, 1908[a], pp. 180, 181, 191.

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1890. Aaron, Mrs. C. B. Life histories and structures of the Odonata. In the Dipterous enemies of man: Their life histories and structure. A treatise on their extermination. Dragon Flies versus Mosquitoes. The Lamborn prize essays, New York, II, p. 50.

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Enock, Fred. Proc. Ent. Soc., London, p. XVIII.

1898. Ashmead, W. H. Ent. News, IX.

1900. (*a*) *Idem.* Proc. U. S. Nat. Mus., XXII, p. 382.

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[1] Reared by Mr. J. J. Davis, Chicago, Ill. [2] Introduced artificially from Europe. [3] The rearing as recorded by Needham does not distinguish between the hosts, so it is taken for granted that the parasites are common to both. Ashmead merely gives *Lestes* species. Needham records at first five egg-parasites and one hyperparasite, whereas Ashmead records five from the egg of *Lestes* sp., but states *Hyperteles polynemæ* and *Tetrastichus polynemæ*, as their names indicate, to be parasitic on *Polynema needhami*, novel cases of secondary parasitism. Later, Needham changed the record to agree with that of Ashmead. [4] "Evidently a hyperparasite on the *Polynema* noted below." Ashmead, 1900, p. 616. [5] "Undoubtedly a hyperparasite of *Polynema needhami*." Ashmead, 1900, p. 616. [6] In England Enock (1897) records *Alaptus fusculus* Walker and a supposed male specimen of *A. minimus* Walker from the eggs of *Stenopsocus cruciatus* (Linnæus), a record overlooked in Girault, 1908[b]. [a] This is the first record of egg-parasites in the Platyptera. (See Girault, 1910, p. 244.) [7] Imported into Massachusetts from Japan. [8] Secondary on *Schedius*; *cf.* Howard. [9] *Pachyneuron gifuensis* Ashmead should be mentioned here as a secondary parasite of the Schedius and Anastatus and as tertiary upon the Tyndarichus. (Howard, 1. c., p. 8). And also see *Atoposomoidea ogimæ* Howard on the pages following (1. c). [10] I have verified this record through specimens reared from the same host in North Carolina. [11] This is the *Trichogramma* sp. of Fiske (1910).

(*b*) *Idem.* Some hymenopterous parasites from dragon-fly eggs. Ent. News, XI, pp. 615–617.

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(*b*) *Idem.* A monographic catalogue of the Mymarid genus *Alaptus* Haliday, etc. Annals Ent. Soc. Amer., I, pp. 180, 181, 191.

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(*a*) Crawford, J. C. Proc. Ent. Soc. Washington, XI.

(*b*) *Idem.* *Ibid.*

(*a*) Girault, A. A. Psyche, XVI, pp. 106–107.

(*b*) *Idem.* Jour. N. Y. Ent. Soc., XVII, December.

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TWO NEW NAMES OF SPHECOID WASPS.

By S. A. Rohwer,
U. S. National Museum, Washington, D. C.

The following two names purposed by Billberg in 1820 have generally been overlooked by Hymenopterists.

Genus Ammobia Billberg.

Ammobia Billberg, Enumartio Insectorum, 1820, p. 105.
Type.—*Pepsis argentata* Fabricius.
Chlorion (*Ammobia*) umbrosum (Christ.).
Syn.—**Proterosphex** H. Fernald. Ent. News, vol. 16, 1905, p. 165.

This genus was originally treated as follows (Eg. equals Billberg):

"G. **Ammobia** Eg.—Amophila Krb. Latr. Ed. euc.—Pepsis Fbr. Spnl.—Miscus Jur.—Sphex Auct. coet.

**Abdomine thorace duplo longiore*	prætiosa	Eg. 5.
	sericea	Ins. Mar. pacif. Fbr.
***Abdomine longitudine thoracis*	argentata	Hisp.—
	arenaria	Svec.—"

The first species included, *prætiosa* Billberg, is a nomen nudum.

The second species, *Pepsis sericea* Fabricius, is a variety of *Sphex* (F. F. Kohl) *aurulentus* occurring in the West Indies so probably was not before Billberg and should not be taken as the type.

The third species, *Pepsis argentata* Fabricius, is a common European species; is a synonym of *Sphex* (F. F. Kohl) *umbrous*, and may be chosen as the type of *Ammobia*.

The fourth species, *Pepsis arenaria* Fabricius, is a synonym of *Sphex* (*Ammophila* Kirby and Auctorum) (*Psammophila*) *hirsuta.*

Inasmuch as either *Psammophila* Dahlbom (1842) or *Proterosphex* Fernald (1905) would have to fall as a synonum of *Ammobia* Billberg it has seemed advisable to choose the latter name as the synonym, so the first species which could with propriety be chosen as the type of Billberg's genus is here designated as such.

After carefully reviewing the case of *Sphex* versus *Ammophila*, I can do nothing but agree with Dr. H. Fernald, and unless some earlier designation for the types of the genera in question can be found, I can see no way this change can be avoided. The objection offered by Dr. F. F. Kohl[1] only serves to put off the day when our nomenclature will be put on a firm basis.

GENUS LESTICA BILLBERG.

Lestica Billberg, Enumeratio Insectorum, 1820, p. 107.
Type.—*Crabro subterraneus* Fabricius.
Syn. **Ceratocolus** Lepeletier, Ann. Ent. Soc. France, vol. 3, 1834, p. 739.

Originally treated thus: (Eg. equals Billberg.)

' G. **Lestica** Eg.—Sphex Linn. VII.—Vespa Linn. Gffr.—Crabro Auct. pler.

subterranea	Svec. Fbr.	fossoria	Svec. Linn.
peltata	——— ———	6 cincta	——— Fbr.
cribaria	——— Linn.	alata	Germ. Pnz.
clypeata	——— ———	dimidata	——— ———."

Included species:

1. *Crabro subterraneus* Fabricius, a common European species which may be chosen as the type; placed in *Ceratocolus* by Dahlbom in 1845.

2. *Crabro peltata* Fabricius, said to be a synonym of *cribrarius* Linnæus.

3. *Vespa cribrarius* Linnæus, designated as the type of *Crabro* in 1837.

4. *Sphex clypeata* Linnæus, a common European species; placed *Thyreus* in 1864.

5. *Sphex fossorius* Linnæus, a well-known species; placed in *Solenius* in 1870, and erroneously chosen as the type of *Crabro* in 1899.

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[1] Ann. k. k. Naturhist. Hofmus. Wien Bd. 21, 1906, pp. 228–229.

6. *Crabro sexcinctus* Fabricius, a well-known species; placed in *Solenius* in 1852.

7. *Crabro alatus* Panzer, a common species; placed in *Ceratocolus* in 1834 and chosen as the type of the same genus in 1899.

8. There is no *dimidata* Panzer.

Crabro subterraneus is chosen as the type because it is the first well-known species included. It is consubgeneric with *Crabro alatus* Panzer, the designated type of *Ceratocolus*, hence the above cited synonymy.

BOOK REVIEWS.

The House Fly—Disease Carrier; an account of its dangerous activities and of the means of destroying it. By L. O. Howard. pp. xix–312; figs. 40. Frederick A. Stokes Co., New York. $1.50.

The dangerous character of the house fly as an agent in the spread of disease has only very recently become a matter of common knowledge, but the great activity during the past two or three seasons by health authorities and civic associations has instilled a wholesome dread of this insect in the minds of the public at large.

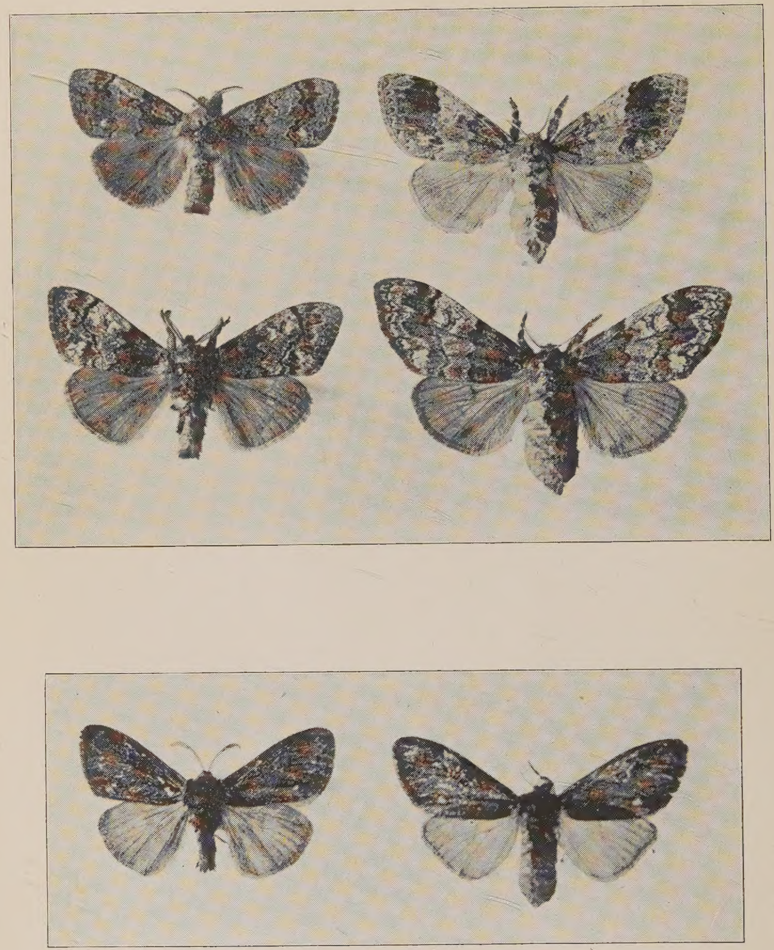
Many scattered, incomplete, and sometimes grossly overstated accounts of the house fly have appeared in the public press, or in pamphlet form to enjoy a wide distribution. These have accomplished great good, but those desirous of presenting the matter in accurate form have been hampered by the lack of any complete treatise in popular style, until the appearance of Doctor Howard's book.

Although considering the matter from many sides, the book is eminently economic in nature, with chapters on Zoölogical Position, Life History and Habits; the Natural Enemies of the Typhoid Fly; the Carriage of Disease by Flies, Remedies and Preventive Measures, Other Flies Frequenting Houses, as well as a short bibliographical list and several appendices giving lists of flies frequenting human dejecta, those found in kitchens, and those reared from cow manure, together with a copy of the laws of the District of Columbia relating to the fly nuisance, and a reprint of Stiles' "Directions for Building a Sanitary Privy."

Every entomologist will wish to see the book widely distributed among those indifferent to the dangers attending the presence of house flies, and persons desiring to know the present actual economic status of these insects, can do no better than to peruse its pages.

The volume is well printed; with excellent figures, most of them gathered from published sources, including several of Cobb's very fine photographic enlargements of the entire fly and the head. While its author says that the book "is not intended to be a scientific monograph; it is simply an attempt to tell in an understandable way what is known about the subjects in the title," the material is so well selected that few can claim familiarity with all the matter that has been included.

C. T. Brues.



EXPLANATION OF FIGURES

Upper row—*Olene leucophæa* A & S., male and female
Middle row—*Olene interposita* Dyar, male and female
Lower row—*Olene styx* n. sp., male and female

BARNES & McDUNNOUGH—OLENE SPECIES.